

# **Mountaintop Mining/Valley Fill Environmental Impact Statement Technical Study**

## **WORK PLAN APPROACH FOR MINING AND RECLAMATION TECHNOLOGY**

August 9, 1999

### **I. Problem Statement**

Coal extraction by surface mining in the steep terrain of in Appalachia, primarily southern West Virginia, eastern Kentucky, and western Virginia, has resulted in placement of excess spoil into valleys adjacent to the actual mining site. While this practice is recognized and allowed under the Surface Mining Control and Reclamation Act of 1977 (SMCRA), the increased size and frequency of the excess spoil valley fills in recent years has raised various environmental and safety concerns. Coal industry representatives purport that large scale surface mining in the steep terrain of Appalachia is the only method that allows a full extraction of low sulfur coal resources competitively with foreign and western coal. Environmental advocates feel that other mining methods exist to allow the extraction of coal while minimizing environmental and safety concerns.

The mining and reclamation technology effort will examine both current, alternative, and future mining and reclamation techniques to assess the physical and economic feasibility of reclamation techniques to minimize adverse impacts to streams, other environmental values, and local communities.

### **II. Goals and Questions to be Addressed by This Work Plan**

The steering committee for the Environmental Impact Statement (EIS) has adopted goals and questions to be addressed from several different perspectives: environmental, regulatory, and public service. This work plan, in conjunction with the other work plans and technical symposia that will be conducted during the preparation of the EIS, will attempt to address the following goals as adopted by the committee:

- Can mining operations be carried out in a way that minimizes adverse impacts to streams and other environmental resources and to local communities.
- What alternatives to valley filling are available to industry?
- What are the most practical techniques?
- Are there insurmountable technical limitations?
- Or financial constraints and tradeoffs?

- What environmental analyses should be required before a mining plan is submitted? During mining? After mining and reclamation end?

Thirty years ago, few reclamation and safety requirements existed in surface mining. Rock layers above the coal seam (overburden) were routinely blasted or pushed down the hill in an uncontrolled fashion (i.e. spoiled). This adversely affected the environment and safety of nearby residents. Laws, such as the Surface Mining Control and Reclamation Act of 1977, were passed to eliminate the uncontrolled placement of spoil. The law specified that spoil must be returned to mined out area to reestablish the approximate original surface configuration. Exceptions for flatter or gently rolling terrain are allowed as necessary for post mining land use. In any event, spoil not needed for reclamation (excess spoil) is required to be placed in designed disposal areas under the direction of qualified personnel.

For the last 20 years in central Appalachia, underground coal mining waned as surface coal mining increased. Mine operators trended towards larger surface mining equipment to recover multiple deeper and thinner seams of coal. Mountaintop mining, whereby an operator removes all a coal seam or seams running through the upper fraction of a mountain or ridge, has allowed central Appalachian coal mining companies to remain economically competitive with western and foreign coal producers. However, the increased size and frequency of the excess spoil fills resulting from mountaintop mining has raised concerns of adverse environmental effects.

Central to the issue is the amount of spoil deposited in adjacent valleys to facilitate, economize, and maximize coal removal. This review will evaluate current mining/reclamation practices and explore the alternative mining/reclamation methods available to the coal industry. One of the guiding principles will be to minimize environmental impact while assuring comparable coal recovery. It should also assess the extent to which implementation of such practices might be limited by technical, economic, or regulatory constraints.

### **III. EIS Team Members and Experts Consulted**

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Team Members: David Vande Linde (West Virginia Division of Environmental Protection); Ken Eltschlager (Office of Surface Mining); Rodney Woods (Corp of Engineers); and Dan Sweeney (U.S. Environmental Protection Agency)

Experts Consulted: John Morgan (Morgan Worldwide Mining)

### **IV. Study Approach**

#### **Task 1: Mine Technology and Reclamation Mini-Symposium**

This symposium held on June 23 and 24 at DOE's facilities in Morgantown, West Virginia gave experts

from the industry, academia, private consultants and government the opportunity to show case and educate the regulators responsible for the EIS. Focus was on all the technical components of the mine plan that ensure optimum mining and reclamation. The symposium addressed the following issues:

- C Overview of the EIS purpose and the role of the symposium
- C Historical trends of mine plan development and how the plan can change over time.
- C The newly proposed West Virginia approximate original contour formula
- C How environmental considerations are factored into the mine plan
- C Can mining equipment be modified to achieve better reclamation
- C Mining and Reclamation Trade - does post mining land use affect backfilling
- C Future mining methodologies and equipment
- C Panel discussion on the important components of a mine plan
- C Discussion of a mine plan development scenario

A mining case study scenario was developed by coal industry presenters to explain the process that coal companies undergo when considering to develop a track of coal reserves for mining. The presentation gave the audience a better understanding of the impacts of using various mining methods (both surface and underground mining methods) were discussed. The positive and negative aspects were described as well as the overall impetus for the coal companies choice decision to mine. A summary of the symposium is being prepared by the DOE contractors for inclusion in the EIS.

### **Task 2:** *Detailed Mine Plan Case Study Evaluation*

As a follow up to the mini-symposium and particularly the mine case study, the study team proposes to do a more in depth case study of the impacts of mining a theoretical track of coal using various mining techniques. The detailed study will focus on both surface mining methods: (1) Contour or strip mining, (2) area mining, (3) modified area mining (4) mountaintop removal, (5) auger mining, and (6) highwall mining; and underground mining methods: (1) Room-and-pillar mining, (2) room and pillar with secondary mining, and (3) longwall mining.

The review will outline all potential mining alternatives for a theoretical mine plan scenario and weight the advantages and disadvantages related to resource recovery, mining and reclamation costs, excess spoil generation, environmental tradeoffs (negative and positive effects). If this proposal is undertaken, it will be performed by a contractor with the knowledge of all mining techniques and specialized computer programs currently available to the mining industry for developing mine plans.

## **V. Cost Estimates**

EPA though the DOE Federal Energy Technology Center (FETC) funded the Mining Technology Symposium in Morgantown West Virginia. FETC provided all the administrative support, including mailings to the invitees, multimedia and graphical support, facilities, pre- and post-symposium documents, and facilitation. A summary of the symposium will be available soon.

Additional funding will be needed in FY 2000 to develop a series of detailed cost and mine plan iterations using different mining techniques. Thirteen mine plan will be developed under contract:

First surface mine plan iteration on mountaintop removal	\$ 70,000
Subsequent surface mine plan iterations (10) @ 30% of \$70,000	210,000
Underground mine plan for longwall mine	35,000
Underground mine plan for room and pillar mine (@ 30% of 35,000)	10,000
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Total cost	\$325,000

Further information regarding this work plan can be obtained by contacting Mr. Kenneth Eltschlager of the Office of Surface Mining at (412) 937-2169, or e-mail [keltschl@osmre.gov](mailto:keltschl@osmre.gov).